

What is claimed is:

1. A method for vaccinating cattle against diseases mediated by infection,
comprising administering an effective amount of an *H. somnus* vaccine, wherein the *H.*
somnus is susceptible to killing by bovine complement-containing serum.

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2. The method of claims 1, wherein the *H. somnus* releases reduced amounts of
endotoxin during growth as compared to virulent *H. somnus*.

3. A method for vaccinating cattle against diseases mediated by infection,
10 comprising administering an effective amount of an *H. somnus* vaccine, wherein the *H.*
somnus releases reduced amounts of endotoxin as compared to virulent *H. somnus*.

4. The method of claim 3, wherein the *H. somnus* is susceptible to killing by bovine
complement.

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5. The method of any of claims 1 to 4, wherein the *H. somnus* is live.

6. The method of any of claims 1 to 4, wherein the *H. somnus* is killed.

20 7. The method of any of claims 1 to 4, wherein the *H. somnus* lacks the expression
of one or more immunoglobulin binding proteins expressed by virulent *H. somnus*.

25 8. The method of claim 7, wherein the lack of expression of one or more
immunoglobulin binding proteins is achieved by the step of genetically engineering *H.*
somnus to delete one or more genes encoding the one or more immunoglobulin binding
proteins.

9. The method of any of claims 1 to 8, wherein the *H. somnus* expresses a
protective antigen.

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10. The method of claim 9, wherein the protective antigen is a 40 kDa
outermembrane protein.

11. The method of any of claims 1 to 10, wherein the *H. somnus* is selected from the group consisting of PTA-600, PTA-601, PTA-602 and PTA-603, deposited with the American Type Culture Collection.

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12. The method of any of claims 1 to 11, wherein the *H. somnus* is genetically engineered to express one or more protective antigens.

13. The method of claim 12, wherein the *H. somnus* is genetically engineered to
10 express one or more protective antigens from pathogens other than *H. somnus*.